

# A prospective medico-legal study of physical and sexual child abuse in Alexandria governorate, Egypt

Physical and sexual child abuse in Alexandria, Egypt

Zahraa K. Sobh<sup>1</sup>, Heba M. Menessi<sup>2</sup>

<sup>1</sup>Department of Forensic Medicine and Clinical Toxicology, Faculty of Medicine, University of Alexandria

<sup>2</sup>Violence Against Women and Children Unit in the Medicolegal Department of Ministry of Justice at Alexandria, Ministry of Justice, Egypt

## Abstract

**Aim:** Child maltreatment is one of the most prevailing violations of human rights. Limited knowledge is available regarding child abuse in Arab countries including Egypt. This article highlights the medicolegal aspects of physical and sexual abuse against children under the age of 12 years in Alexandria governorate, Egypt.

**Material and Methods:** This is a prospective cross-sectional study that included all children under 12 years of age with reported abuse in Alexandria over a six-month period. All children underwent a general examination followed by an examination of genital and anal regions using colposcopy.

**Results:** The study included a total of 67 children with suspected abuse; 18% physical abuse and 82% sexual abuse. Males constituted 71.64% of the children. All children with suspected intra-familial physical violence were proved to have non-accidental traumas. Delinquents had accidental and self-inflicted injuries. Anal, vaginal, and oral penetration represented 74.54% 12.72%.and 12.72% of children with suspected sexual assaults, respectively. Medicolegal evidence was present in 29% of the children with suspected sexual abuse and all children with positive medicolegal findings were sodomy victims.

**Discussion:** Reported child abuse in the Alexandria governorate is the tip of the ice burg. Children's homes are the most dangerous places in which violence took place. Intra-familial physical abuse against young children is socially acceptable that is why only serious traumas were notified. Accidental and self-inflicted injuries were reported among delinquents. Medicolegal assessment of physical trauma usually yields firm medicolegal opinion. Sexual child abuse was more reported than physical abuse; however, sexual abuse is difficult to be proved.

## Keywords

Physical abuse; Sexual abuse; Child maltreatment; Alexandria; Egypt

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Corresponding Author: Zahraa K. Sobh, Forensic Medicine and Clinical Toxicology, Faculty of Medicine, University of Alexandria, Champollion street, Al Attarin, Alexandria, Egypt.

E-mail: z\_khalifa2017@yahoo.com / zahraa.sobh@alexmed.edu.eg P: +2 01020744739

Corresponding Author ORCID ID: <https://orcid.org/0000-0002-7836-9639>

## Introduction

Child abuse and neglect (CAN) or child maltreatment is one of the most prevailing violations of human rights that endanger children worldwide. The young children are ideal victims; they could not protect themselves because of limited mental and physical development. Besides, often abuse occurs in private places where the perpetrators are children's caregivers. The inability of the abused children to self-report violence exposes them to further assaults [1, 2].

Child abuse is a grave offense that often goes unrecognized until serious or fatal sequences has occurred. Thus, child maltreatment is the third leading cause of death in children between one and four years of age, and nearly a quarter of murdered children have been examined by physicians within a month of their death [3]. Other than the deadly outcome of child abuse, devastating short and long-term consequences might occur. Long-term sequelae of abuse might manifest as psychological disorders such as post-traumatic stress disorder (PTSD), depression, psychosis, drug dependence, and criminal behavior [4].

Child maltreatment is categorized into four major types as follows: physical abuse, sexual abuse, psychological maltreatment, and neglect. Medicolegal assessment is requested for children with suspected physical and sexual abuse to elucidate objective findings [5]. The evaluation of children with physical and sexual assaults is a challenging task. The injustice of the wrongful conviction of innocents will subject them to exaggerated penalties. On the other hand, misdiagnosis of maltreatment exposes the child to further victimization [6]. Physical child abuse is the deliberate infliction of physical trauma to the child with a high likelihood of harm. Physical abuse is suspected upon the presence of multiple injuries in various body areas at different healing stages. Non-accidental injuries are commonly discovered in protected areas, such as the abdomen, back, upper arms, and buttocks [6].

Sexual child abuse is any sexual activity with a child for the sexual gratification of an older adolescent or adult. The nature of sexual violence toward children is greatly variable and not usually involved physical contact. Sexual contact of the victim could be either libidinous acts or penetrative sexual intercourse [7].

The pattern of violence against children differs from one country to another. Also, the demographic characteristics of the victims may exhibit variations between different societies. Limited knowledge is available regarding child abuse in Arab countries including Egypt [5-7].

Providing informative data regarding child abuse is the first step for designing effective protective programs. Thus, the present study aimed to describe the pattern of violence against children under the age of 12 years with suspected physical and sexual abuse in Alexandria governorate, Egypt. The contribution of forensic examination in the verification of child abuse was studied as well.

## Material and Methods

The present work is a prospective cross-sectional study that included all children under the age of 12 years with suspected physical and sexual assaults referred to the Violence against

Women and Children Unit in Alexandria for medicolegal evaluation for 6 months (from the 1 August 2018 to the end of January 2019). The study complied with codes of Egyptian Forensic Medicine Authority (EFMA) and Ethics Committee of the Faculty of Medicine, Alexandria University (IRB Number: 00012098, FWA Number: 0018699, Approval serial number: 0304059). An incant of all children and informed consent of their guardians were obtained.

Humanitarian aspects were considered during the medicolegal management of children with suspected abuse. The children were interviewed regarding the circumstances of the assault, such as the manner of violence, number, of the suspect(s) and his/her relationship to the child, venue of the assault, frequency of assault (s), and the time passed since the last incidence. Before the examination, a simple explanation of the required examination positions and procedures was provided. [8].

### •Medicolegal examination:

#### 1-General body examination:

All children were comprehensively examined for general signs of violence. Any visible injuries were documented appropriately [8].

#### 2-Examination of the anal region and genitalia using colposcopy:

A colposcope provides clear and magnified photos of the anal region and genitalia and the captured images are considered as legal documentation [8].

The anal region was examined in the knee-chest and left lateral position for the presence of any injuries. Also, anal sphincter tone and reflex were assessed. Anal swabs were obtained if the child presented within three days following the last suspected penile-anal penetration [9].

Male genitalia were properly inspected for the presence of recent or old injuries. All relevant injuries were documented. In females, a careful genital examination was conducted in lithotomy and knee-chest positions. The perineum, pubic area, labia majora, labia minora, clitoris, posterior fourchette, fossa navicularis and hymen were inspected for any recent or old injuries. The vaginal swabs were obtained from the girls who presented within seven days following suspected vaginal penetration [9].

### •Medicolegal findings:

1-Positive findings: Physical child abuse is confirmed by the presence of recent or old injuries that are consistent with the given history. Nevertheless, sexual child abuse is proved by the presence of any relevant injuries concerning the suspected sexual act. Also, the detection of spermatozoa is solid evidence that denotes the occurrence of a sexual offense [10].

2-Negative findings: The lack of any relevant evidence concerning a suspected assault [10].

### Statistical analysis:

Data were fed to the computer and analyzed using IBM SPSS software package version 20.0. The Kolmogorov-Smirnov test was used to verify the normality of the distribution of variables. Student t-test was used to compare two groups for normally distributed quantitative variables, while ANOVA was used for comparing between more than two groups and followed by the Post Hoc test for pairwise comparison. Spearman coefficient was used to correlate between quantitative variables.

## Results

A total of 67 children under the age of 12 years were medicolegally examined for 6 months. Nearly three-quarters (71.64%) of the children with suspected abuse were males. Physical abuse was suspected in 12 children (18%), ranging from 3 to 11 years, with a mean age of  $7.5 \pm 2.94$  years. Whereas, sexual abuse was suspected in 55 children (82%), ranging from 2.5 to 11.75 years, with a mean age of  $8.2 \pm 2.4$  year. There was no significant difference in the mean age of children with suspected physical and sexual abuse ( $t=0.879$ ,  $p=0.383$ ). Figure 1 illustrates the manners of physical and sexual assaults against children included in the current study.

### A- Physical child abuse: (Table 1)

Physical assaults were attributed to one person in all cases. Three-quarters of the children were presented within three days following the last physical aggression. Half of the physical abuse of children was claimed to occur in children's homes. The perpetrators were fathers' wives, mothers' husbands, and a father. Also, the physical violence was alleged to occur in custody against delinquents either during arrest or detention.

Medicolegal findings:

All children with suspected physical abuse ( $n=12$ ) had significant injuries, as follows:

- All children with suspected intra-familial violence ( $n=6$ ) were proved to have non-accidental traumas. Four children had various injuries (dry burns, abrasions, contusions, cut wounds, bites) in different anatomical areas at different ages, and two children had massive dry burns. Thus, in the current study, child' home was proved to be the place for all proven cases of physical abuse where the assailant was one of the family members.
- Four delinquents had fabricated wounds. These self-inflicted injuries were superficial parallel abrasions and cuts in accessible areas in the head or forearms.
- Two delinquents were accidentally injured as they resist police during arrest; one had elbow dislocation and the other had blunt head trauma.

### B- Sexual child abuse:

Table 2 revealed that anal penetration was the manner of sexual assault of nearly three-quarters (74.54%) of the children with suspected sexual abuse. Vaginal and oral penetration, each was suspected in 12.72% of the cases. The suspected anal penetration was subdivided according to the penetrating part. Penetration by male organ (sodomy or penile-anal penetration) was suspected in 75.60% of children ( $n=31$ ) with suspected anal penetration, whereas, in the rest of the cases fingers, pencils, and rulers were the penetrating objects.

Oral intercourse was suspected in younger children aged between 2.5 to 9 years, whereas vaginal intercourse (rape) was suspected in girls between 3.3 and 11.8 years. The anal penetration was suspected in older children aged between 6 and 12 years. The mean ages of the children with suspected oral, vaginal, and anal penetration were  $6 \pm 2.7$ ,  $7.5 \pm 3.8$ , and  $8.7 \pm 1.8$  years respectively. There was a significant difference between the mean ages of the children and three manners of penetrative sexual assaults ( $p= 0.012$ ).

Regarding anal penetration, no significant difference was elucidated between the mean ages of the children and suspected penile-anal penetration ( $n=31$ ) and other forms of anal penetration ( $n=10$ ), the mean ages were  $8.8 \pm 1.8$  and  $8.6 \pm 1.8$  years respectively ( $p=0.977$ ).

Considering circumstances of sexual offenses among studied children, Table 3 elucidated that sexual assaults were attributed to one person in nearly three-quarters (74.54%) of the cases. Nearly half (43.63%) of the cases were examined within three days from the last assault. The kindergartens and schools represented the commonest place for suspected sexual offenses (38.18%), where the place of the assault was the bathrooms in 18 cases, and the gardens in three cases. In such situations, the suspected persons were doormen in nine cases, clean workers in seven cases, and older students in five cases.

**Table 1.** Reported incidents of physical child abuse in a 6-month period in Alexandria governorate ( $n=12$ )

Case	Sex	Age (years)	Accused relation to child	Venue	Time-lapse to examination	Physical injuries	Medicolegal Opinion
1	Male	9	Mother's husband	Home	2 days	• Dry burn left hand • Bite back of the neck • Abrasions and cut wounds and dry burns in both thighs	Non-accidental
2	Male	3	Mother's husband	Home	2 days	• Bite in left shoulder • Contusion in left knee • Abrasions and cut wounds in both thighs	Non-accidental
3	Male	3	Father's wife	Home	8 days	• Dry burn in left shoulder	Non-accidental
4	Male	10	Policemen	Street	2 days	• Cut wounds in head	Self-inflicted
5	Males	11	Policemen	Police station	1 day	• Abrasions in left forearm • Multiple cut wounds in scalp	Self-inflicted
6	Male	9	Policemen	Street	1 day	• Right elbow dislocation	Accidental
7	Male	10	Policemen	Police station	1 day	• Cut wound in the head	Self-inflicted
8	Male	8	Policemen	Street	1 day	• Contused wound in the head and black eye	Accidental
9	Male	10	Policemen	Police station	1 day	• Multiple abrasions in right and left forearms	Self-inflicted
10	Male	4	Mother's husband	Home	3 days	• Abrasions and cut wounds in both thighs	Non-accidental
11	Female	8	Father	Home	4 months	• Scar of burn in the left foot and leg	Non-accidental
12	Female	5	Father's wife	Home	4 days	• Dry burn of the back • Fingernail abrasions in upper limb	Non-accidental

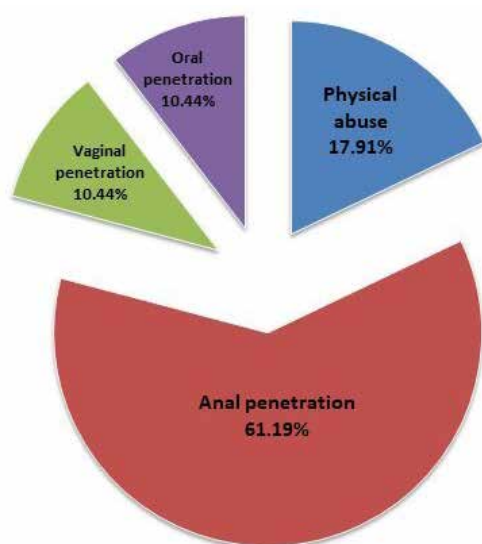
**Table 2.** Relation between the age of the children and the manner of penetrative sexual assault (n = 55)

Manner of sexual abuse	No.	Age (years)			Test of Sig.	p
		Min. – Max.	Mean ± SD.	Median		
Anal penetration	41(74.54%)	6.0 – 12.0	8.7 ± 1.8	9	F = 4.861*	0.012*
Vaginal penetration	7 (12.72%)	3.3 – 11.8	7.5 ± 3.8	6		
Oral penetration	7 (12.72%)	2.5 – 9.0	6.0 ± 2.7	6		
Total	55 (100%)					

F: F for ANOVA test, Pairwise comparison is done using Post Hoc Test  
 \*: Statistically significant at p ≤ 0.05

**Table 3.** Circumstances of sexual abuse in all children with suspected sexual abuse (n=55), and in those with positive medico-legal findings (n=16)

Circumstances of Sexual abuse	Children with suspected abuse	Children with positive findings
Number of accused (s)		
1	41 (74.54%)	14 (87.50%)
>1	14 (25.45%)	2 (12.50%)
Accused relationship to the child		
School personal	21 (38.18%)	2 (12.50%)
Family member	13 (23.63%)	7 (43.75%)
Neighbor	13 (23.63%)	3 (18.75%)
Friend	8 (14.54%)	4 (25.00%)
Venue		
Kindergarten/School	21 (38.18%)	2 (12.50%)
Child home	13 (23.63%)	7 (43.75%)
Accused home	17 (30.90%)	6 (37.50%)
Outdoors	4 (7.27%)	1 (6.25%)
Frequency of sexual offense (s)		
1	32 (58.18%)	6 (37.50%)
> 1	23 (41.81%)	10 (62.50%)
Time-lapse to examination (days)		
≤3	24 (43.63%)	7 (43.75%)
3- <7	13 (23.63%)	4 (25.00%)
≥ 7	18 (32.72%)	5 (31.25%)
Total	55 (100%)	16 (100%)



**Figure 1.** Manners of suspected abuse against children under the age of 12 years in Alexandria governorate in 6-months period

**Medico-legal findings:**

During the general examination, no injuries could be detected in 88% of the children with suspected sexual assaults. The abrasions were the only noticed injuries in 12 % of children. By local examination, the medicolegal evidence was present in less than one-third (29%) of the children with suspected sexual abuse. All cases with positive medicolegal findings were suspected of penile-anal penetration (sodomy). The evidence of penile-anal penetration was present in 16 children out of 31 children with suspected sodomy. The children with positive anal findings were as follows: seven cases with recent fissures; six cases with old anal fissures; two cases with recent anal fissures along with a positive anal swab and a case with an only positive anal swab. Diminished anal reflex and sphincter tone was present along with recent and old anal fissures (n= 15).

The circumstances of sexual assaults with positive medicolegal evidence are demonstrated in Table 3. The child home was proved to be the commonest place for sexual violence (43.75%) and could be described as intra-familial sexual abuse, whereas, 37.50% of sexual assaults took place in accused homes. Two children were victimized by older students in educational institutes.

Generally, the mean age of the children with evidence for sexual assaults was significantly higher (9.6 ± 1.9) than that of those with negative findings (7.6 ± 2.3) (t= 3.220, p= 0.002). Also, there was a significant correlation between the age of the children and the positivity of the findings (r=0.410, p=0.002).

Regarding sodomy, the mean age of cases with evidence of sexual offenses was significantly higher (9.5 ± 1.9) than that of those with no findings (7.9 ± 1.3) (t= 2.699, p= 0.011). Also, there was a significant correlation between the age of sodomy victims and the positivity of the findings (r=0.451, p=0.011).

**Discussion**

In the Arab world, child abuse is a silent hazard that might result in serious consequences [11]. In Egypt, a medicolegal examination of the children is often restricted to notified criminal cases. Public prosecution refers to those with reported physical or sexual abuse to forensic investigation. [12]. Therefore, for 6 months, only 67 children under the age of 12 years were examined in Alexandria medicolegal department to verify their exposure to violence. Alexandria is the second-largest city in Egypt, with a population of more than 5.200 million [12]. Thus, the notified child abuse in the present work in comparison to population size is the tip of the ice burg.

Similarly, under-reporting of child maltreatment was mentioned by studies conducted in other Egyptian governorates such as

Cairo [13], Suez Canal [7], and El Fayoum [14]. Similarly, there was a defective reporting of child abuse in other Arab countries such as the Kingdom of Saudi Arabia (KSA) [2,6], United Arab Emirates (UAE) [15], Bahrain [16], Yemen [17], and Jordan [5]. This could be attributed to the inability of the children to disclose their victimization due to their immaturity along with fear of consequences. Also, the close relationship between the children and their offenders exposes them to repeated unreported abuse [6,17].

The present work is concerned about violence against children under 12 years of age. Studies by Modelli et al. (2012) [18] and Silva and Barroso-Junior (2016) [19] are similarly concerned about the medicolegal investigation of maltreatment of children under the age of 12 years, because the age of 12 years is the average pubertal onset. Young children are more vulnerable to abuse than older children as a result of their marked physical and mental immaturity. Also, little children are unlikely to be engaged in willful sexual activities because of the non-development of natural sexual drive [18,19].

The reported sexual abuse outnumbered physical abuse cases in the current study that is in concordance with Al Madani et al. (2012) [6] and Al-Zayed et al. (2020) [2]. This points to serious concern about sexual violence as honor-related crimes in oriental societies. Whereas, physical violence against children is socially acceptable, that is often considered a corrective tool. Besides, community norms consider parents' behavior toward their children as a family's private issue, into which outsiders are not allowed to interfere [2, 6].

In the present work, the males constituted nearly three-quarters (71.64%) of the children with suspected child maltreatment. Over-representation of males is also mentioned by Al-Zayed et al. (2020) [2] who stated that 71% of notified child maltreatment cases in Riyadh, KSA were males. The males' overactivity might trigger their exposure to physical violence. Besides, sodomy is the commonest sexual assault in pre-pubertal victims that explain their vulnerability to sexual abuse more than females. On the other hand, males represented 58%, 43.7%, and 46.1% of abuse victims in Bahrain [16], Dammam (KSA) [6], and Suez Canal, Egypt [7], respectively that could be attributed to samples-related variations.

Assessment of physical injuries in the current study yielded a firm medicolegal opinion in all children with suspected physical violence. Six children had abusive injuries in the form of dry burns, abrasions, contusions, cut wounds, and bites in different body areas. Similar non-accidental injuries in the children were described by Al-Mahroos and Al-Amer (2011) [16] and El-Banna (2014) [20]. All children with suspected intra-familial violence were proved to have non-accidental injuries where the children's homes were the place of physical abuse that is in agreement with Ghanem et al (2018) [21].

Regarding delinquents, two were accidentally injured during police arrest and four had fabricated wounds in the form of trivial parallel abrasions and cuts in the head and upper limbs. Self-inflicted injuries by juvenile offenders were also described by McKinnon et al. (2016) [22].

Considering children with suspected sexual assaults, the lack of signs of resistance in the majority of these children might reflect the close trustable relationship between the child and

the offender who controlled the child with means other than physical violence [23]. Similarly, Modelli et al. (2012) [18] and Walker (2015) [24] reported an absence of defense injuries in a large percentage of sexually abused children.

The medicolegal evidence of penetrative sexual assault was present in less than one-third of the children that is in concordance with Walker (2015) [24] and Al-Zayed et al. (2020) [2] who did not find conclusive evidence in a large percentage of the children with suspected sexual assaults. The false allegations are unlikely in young children [25]. Many reasons could explain the high negativity of medicolegal evidence in sexual child abuse. Children might not understand what happened exactly and they could describe inter-labial (vulvar) or inter-gluteal penetration as vaginal or anal intercourse. Also, the perpetrator could be concerned to obtain sexual gratification with minimal force. Besides, the delayed presentation allows the healing of injuries and loss of evidence [23,24].

The mean age of the children with evidence of sexual assaults, in the current work, was significantly higher than that of those with negative findings. Also, a significant correlation was demonstrated between the age of the children and the positivity of the findings that is in agreement with Silva and Barroso-Junior (2016) [19]. The younger children could explain external friction or penetration trails as actual anal or vaginal penetration. Therefore, penetration reported by older children could be more likely associated with actual penetration [10,19]. The inherited challenge in the evaluation of sexual assaults is a considerable degree of uncertainty. Wide-range of normal variations and pathological conditions in genital and anal regions could simulate genuine injuries. Therefore, great caution should be taken during the interpretation of positive findings concerning sexual assaults [12].

Although the present study was restricted to the children referred for forensic investigation, the current findings serve as a valuable epidemiological reference dataset that represents a large population sector. The current results will be useful to further monitor the trend of child abuse.

### Conclusions

This study concluded that the maltreatment of a young child is extremely under-reported in Alexandria. Abuse is often committed by close persons that expose the child to endless cycles of violence. Physical abuse is socially accepted in oriental societies. Thus, only serious traumas and injuries of medicolegal aspects were notified to authorities. Usually, the evaluation of physical abuse results in firm medicolegal opinions. Nevertheless, the assessment of sexual abuse among young children is a challenging and cautious interpretation of findings is mandatory.

### Scientific Responsibility Statement

*The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.*

### Animal and human rights statement

*All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.*

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**Conflict of interest**

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